

CLAIMS

WHAT IS CLAIMED IS:

1 1. A method for providing buffer-to-buffer credit port-level flow control for a
2 computer network in operative communication with a plurality of ingress and egress network
3 processors, each having an egress port and an ingress port that is associated with a buffer-to-
4 buffer credit value corresponding to the current number of frames the ingress port may send, a
5 buffer value corresponding to the current total frame size the ingress port may send, and a
6 pending buffer-to-buffer value corresponding to the pending buffer-to-buffer credits an egress
7 port may issue the ingress port, and wherein a set of network processors is associated with a
8 bridge, the method comprising the steps of:

9 sending a frame from the ingress port to a destination egress port, if the ingress
10 port has a sufficient buffer-to-buffer credit value and buffer value;

11 decrementing the buffer-to-buffer credit value associated with the ingress port;

12 decrementing the buffer value associated with the ingress port;

13 determining whether to increment the buffer-to-buffer credit value associated with
14 the ingress port;

15 incrementing the pending credit value associated with the ingress port; and

16 determining whether to send a credit message to the ingress port.

1 2. The method of claim 1,
2 wherein the computer system further comprises a switch fabric; and
3 wherein the network processors are in operative communication with the switch
4 fabric via the associated bridge.

1 3. The method of claim 2, wherein the step of determining whether to increment the
2 buffer-to-buffer credit value further comprises:
3 incrementing the buffer-to-buffer credit value associated with the ingress port if
4 the product of one plus the buffer-to-buffer credit value times the maximum frame size in bytes
5 is less than or equal to a minimum egress buffering value; and
6 wherein the minimum egress buffering value corresponds to the minimum amount
7 of egress buffering that is available for any one egress port.

1 4. The method of claim 3, wherein the step of determining whether to send a credit
2 message to the ingress port further comprises:
3 sending the credit message if the pending credit value is greater than, or equal to,
4 a credit watermark value.

1 5. The method of claim 4, further comprising the step of:
2 increasing the buffer value if the credit message is sent.

1 6. A system for providing buffer-to-buffer credit port-level flow control for a
2 computer network in operative communication with a plurality of ingress and egress network
3 processors, said system comprising:
4 a plurality of ingress and egress network processors, each of said plurality of
5 network processors having an egress port and an ingress port that is associated with a
6 buffer-to-buffer credit value corresponding to the current number of frames the ingress
7 port may send, a buffer value corresponding to the current total frame size the ingress
8 port may send, and a pending buffer-to-buffer value corresponding to the pending buffer-

9 to-buffer credits an egress port may issue the ingress port, and wherein a set of said
10 plurality of network processors is associated with a bridge, wherein:

11 a frame is sent from the ingress port to a destination egress port, if the
12 ingress port has a sufficient buffer-to-buffer credit value and buffer value;

13 the buffer-to-buffer credit value associated with the ingress port is
14 decremented;

15 the buffer value associated with the ingress port is decremented;

16 the buffer-to-buffer credit value associated with the ingress port is
17 determined whether to be increment;

18 the pending credit value associated with the ingress port is incremented;

19 and

20 a credit message to the ingress port is determined whether to be sent.

1 7. The system of claim 6,
2 wherein the computer system further comprises a switch fabric; and
3 wherein the network processors are in operative communication with the switch
4 fabric via the associated bridge.

1 8. The system of claim 7, wherein the buffer-to-buffer credit value is determined
2 whether to incremented further comprises:

3 the buffer-to-buffer credit value associated with the ingress port is incremented if
4 the product of one plus the buffer-to-buffer credit value times the maximum frame size in
5 bytes is less than or equal to a minimum egress buffering value, wherein the minimum
6 egress buffering value corresponds to the minimum amount of egress buffering that is
7 available for any one egress port.

1 9. The system of claim 8, wherein when the pending credit value is greater than, or
2 equal to, a credit watermark value the credit message is sent to the ingress port.

1 10. The system of claim 9, further comprising the buffer value is increased if the
2 credit message is sent.